

DISTRIBUTION OF THE STONEFLIES (PLECOPTERA) OF DELAWARE^{1,2}

Robert W. Lake³

ABSTRACT: Intensive collecting and rearing of species of this aquatic insect order since 1972 have confirmed the presence of 38 species in Delaware. Nineteen of these were found only in the Piedmont physiographic province, 11 were found in both Coastal Plain and Piedmont and eight exclusively in the Coastal Plain. This is the first published detailed distributional list of Delaware stoneflies.

Little attention was given to the stonefly fauna of Delaware until about 1967 when some of the staff and graduate students of the Department of Entomology and Applied Ecology began to intensively collect aquatic insects. Specimens were identified and incorporated into the reference collection of the department. However, most of the collections were immature stages and in many cases could only be determined to genus. Beginning in 1972, in conjunction with a black fly survey of the State, I collected and reared to adult many species of stoneflies and am confident that most of the species occurring in Delaware have now been collected.

Delaware lies within two natural physiographic provinces, the Piedmont and the Coastal Plain. The Piedmont comprises approximately the northern one-quarter of New Castle County. The remainder of New Castle County and Kent and Sussex Counties, are Coastal Plain with much of the eastern portion being within the tidal zone and unsuitable as stonefly habitat (Fig. 1).

At this time 38 species of stoneflies are known from the State. Nineteen of these were found only in the Piedmont, 11 were found in both Coastal Plain and Piedmont and eight exclusively in the Coastal Plain (Table 1).

Distribution records given below include county, nearest town and designation of stream where specimens were collected. In a few instances, adults were collected some distance from streams in UV light traps or around incandescent lights.

This is the first published detailed distributional list of Delaware stoneflies.

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³Associate Scientist, Department of Entomology & Applied Ecology, University of Delaware, Newark, DE 19711.

LIST OF SPECIES

Family Nemouridae

Genus *Amphinemura**A. nigrilla* (Provancher)

New Castle Co: Blackbird, Blackbird Creek & tributaries. Newark, tributaries of White Clay Creek. Ashland, tributary of Red Clay Creek.

A. wui (Claassen)

New Castle Co: Corner Ketch, tributary of White Clay Creek.

Genus *Ostrocerca**O. prolongata* (Claassen)

Kent Co: Pearsons Grove, Jordan Branch.

Genus *Prostoia**P. completa* (Walker)

Kent Co: Pearsons Grove, Jordan Branch.

Sussex Co: Ellendale State Forest, tributary of Gravelly Branch. Woodenhawk, tributary of Marshyhope Creek.

Genus *Soyedina**S. carolinensis* (Claassen)

New Castle Co: Newark, tributaries of White Clay Creek. Ashland, tributary of Red Clay Creek. Talleyville, Thompson's Bridge, tributary of Brandywine Creek.

Family Taeniopterygidae

Genus *Strophopteryx**S. fasciata* (Burmeister)

New Castle Co: Ashland, tributary of Red Clay Creek. Newark, tributary of White Clay Creek. Blackbird, Blackbird Creek.

Genus *Taeniopteryx**T. burksi* Ricker & Ross

New Castle Co: Blackbird, Blackbird Creek & tributaries. Newark, tributary of White Clay Creek. Ashland, tributary of Red Clay Creek.

Kent Co: Frederica, Pratt Branch. Sandtown, Cow Marsh Creek.

Sussex Co: Smith Hill, James Branch. Stockley, Stockley Branch.

T. maura (Pictet)

New Castle Co: Blackbird, Blackbird Creek and tributaries. Ashland, tributary of Red Clay Creek.

T. nivalis (Fitch)

New Castle Co: Thompson, tributary of White Clay Creek. Ashland, tributary of Red Clay Creek. Mermaid, Mill Creek.

Family Capniidae

Genus *Allocapnia**A. nivicola* (Fitch)

New Castle Co: Newark, Tributaries of White Clay Creek. Talleyville, Thompsons Bridge, tributary of Brandywine Creek.

A. recta (Claassen)

New Castle Co: Blackbird, tributaries of Blackbird Creek. Newark, tributaries of White Clay Creek. Corner Ketch, tributary of White Clay Creek. Ashland, tributaries of Red Clay Creek. Talleyville. Thompsons Bridge, tributary of Brandywine Creek. Glasgow, Belltown Run.

Kent Co: Frederica, Pratt Branch. Felton, Murderkill River. Pearson's Grove, Jordan Branch.

Sussex Co: Woodenhawk, tributaries of Marshyhope Creek.

A. rickeri Frison

Kent Co: Pearsons Grove, Jordan Branch.

A. virginiana Frison

Kent Co: Felton, Murderkill River.

Sussex Co: Woodenhawk, Tributary of Marshyhope Creek.

A. wrayi Ross

New Castle Co: Townsend & Blackbird, tributaries of Blackbird Creek.

Genus *Paracapnia**P. angulata* Hanson

New Castle Co: Corner Ketch, tributary of White Clay Creek.

Family Leuctridae

Genus *Leuctra**L. ferruginea* (Walker)

New Castle Co: Newark, tributaries of White Clay Creek. Ashland, tributary of Red Clay Creek. Rockland, tributary of Brandywine Creek.

Sussex Co: Millsboro, Famys Branch.

L. sibleyi Claassen

New Castle Co: Newark, tributary of White Clay Creek.

L. tenuis (Pictet)

New Castle Co: Ashland, tributary of Red Clay Creek.

Genus *Paraleuctra**P. sara* (Claassen)

New Castle Co: Newark, tributaries of White Clay Creek.

Sussex Co: Millsboro, Famys Branch.

Family Peltroperlidae

Genus *Peltoperla**P. maria* Needham & Smith

New Castle Co: Ashland, tributaries of Red Clay Creek. Corner Ketch, tributaries of White Clay Creek. Thompson, tributaries of White Clay Creek. Talleyville, Thompsons Bridge, tributary of Brandywine Creek.

Family Perlodidae

Genus *Diploperla**D. duplicata* (Banks)

New Castle Co: Newark, tributaries of White Clay Creek. Corner Ketch, tributaries of

White Clay Creek. Mermaid, Mill Creek. Blackbird, Blackbird Creek & tributary. Ashland, tributary of Red Clay Creek. Talleyville, Thompsons Bridge, tributary of Brandywine Creek.

Genus *Remenus*

R. bilobatus (Needham & Claassen)

New Castle Co: Newark & Corner Ketch, tributaries of White Clay Creek.

Genus *Isoperla*

I. couthatta Szczytko & Stewart

New Castle Co: Blackbird, Blackbird Creek. Glasgow, Belltown Run. Newark tributaries of White Clay Creek.

Kent Co: Andrews Lake, Spring Creek.

Sussex Co: Woodenhawk, tributary of Marshyhope Creek.

I. clio (Newman)

New Castle Co: Blackbird, Blackbird Creek & tributary.

Kent Co: Frederica, Pratt Branch. Milford, McCauleys Pond.

Sussex Co: Millsboro, Famy's Branch.

I. frisoni Illies

Sussex Co: Woodenhawk, tributary of Marshyhope Creek. Millsboro, Famy's Branch.

I. holochlora (Klapálek)

New Castle Co: Newark & Corner Ketch, tributaries of White Clay Creek.

Pleasant Hill, tributary of Pike Creek. Ashland, tributary of Red Clay Creek.

I. montana (Banks)

New Castle Co: Corner Ketch, tributary of White Clay Creek.

I. similis (Hagen)

New Castle Co: Newark & Corner Ketch, tributaries of White Clay Creek. Ashland, tributaries of Red Clay Creek. Mermaid, Mill Creek. Hockessin. Pike Creek. Talleyville, tributary of Brandywine Creek.

I. transmarina (Newman)

New Castle Co: Corner Ketch, tributary of White Clay Creek.

Family Perlidae

Genus *Paragnetina*

P. immarginata (Say)

New Castle Co: Mill Creek

P. media (Walker)

New Castle Co: Mill Creek & Brandywine Creek

Genus *Phasganophora*

P. capitata (Pictet)

New Castle Co: Brandywine Creek

Genus *Acroneuria*

A. abnormis (Newman)

New Castle Co: Newark & Corner Ketch, tributaries of White Clay Creek. Talleyville, tributaries of Brandywine Creek. Ashland, tributary of Red Clay Creek. Pike Creek.

A. arenosa (Pictet)

Sussex Co: Milton, Omar & Seaford.

Adults, collected in UV light traps.

Genus *Eccoptura**E. xanthenes* (Newman)

New Castle Co: Newark & Corner Ketch, tributaries of White Clay Creek. Ashland, tributary of Red Clay Creek. Talleyville, tributary of Brandywine Creek. Newark tributary of West Branch of Christina Creek. Blackbird, Blackbird Creek.

Genus *Perlesta**P. placida* (Hagen)

New Castle Co: Newark, tributaries of White Clay Creek. Blackbird, Blackbird Creek. Ashland, tributary of Red Clay Creek.

Sussex Co: Smith Hill, James Branch. Millsboro, Famys Branch. Milford, Herring Branch. Woodenhawk, tributary of Marshyhope Creek. Milton, collected in UV light trap.

Family Chloroperlidae

Genus *Hastaperla**H. brevis* (Banks)

New Castle Co: Newark & Corner Ketch, tributaries of White Clay Creek.

Genus *Sweltsa**S. onkos* (Ricker)

New Castle Co: Newark & Corner Ketch, tributaries of White Clay Creek.

Table 1. Distribution of stonefly species in Delaware by physiographic provinces

Piedmont	Coastal Plain	Coastal Plain & Piedmont
<i>Peltoperla maria</i>	<i>Allocaupnia rickeri</i>	<i>Taeniopteryx burksi</i>
<i>Taeniopteryx nivalis</i>	<i>Allocaupnia virginiana</i>	<i>Taeniopteryx maura</i>
<i>Leuctra sibleyi</i>	<i>Allocaupnia wrayi</i>	<i>Strophopteryx fasciata</i>
<i>Leuctra tenuis</i>	<i>Ostrocerca prolongata</i>	<i>Leuctra ferruginea</i>
<i>Allocaupnia nivicola</i>	<i>Prostoia completa</i>	<i>Paraleuctra sara</i>
<i>Paracupnia angulata</i>	<i>Acroneuria arenosa</i>	<i>Allocaupnia recta</i>
<i>Amphinemura wui</i>	<i>Isoperla clio</i>	<i>Amphinemura nigrilla</i>
<i>Soyedina carolinensis</i>	<i>Isoperla frisoni</i>	<i>Eccoptura xanthenes</i>
<i>Paragnetina immarginata</i>		<i>Perlesta placida</i>
<i>Paragnetina media</i>		<i>Isoperla couchatta</i>
<i>Phasganophora capitata</i>		<i>Diploperla duplicata</i>
<i>Acroneuria abnormis</i>		
<i>Remenus bilobatus</i>		
<i>Isoperla holochlora</i>		
<i>Isoperla montana</i>		
<i>Isoperla similis</i>		
<i>Isoperla transmarina</i>		
<i>Hastaperla brevis</i>		
<i>Sweltsa onkos</i>		

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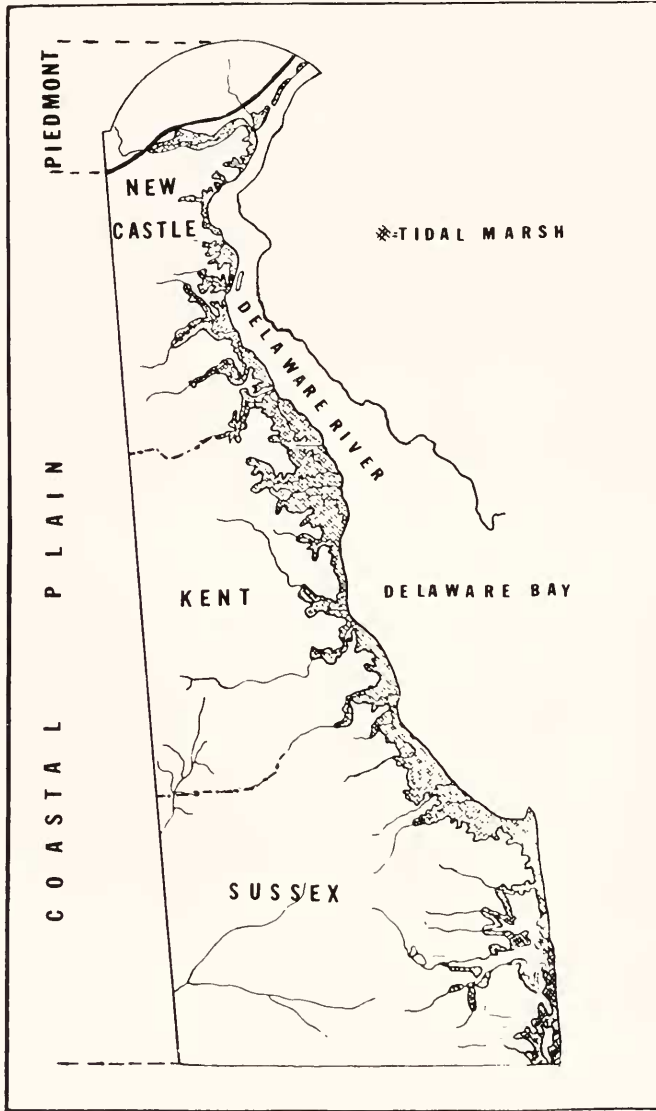


Fig. 1. Map of Delaware showing counties, tidal marshes and physiographic provinces.